

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
30 September 2004 (30.09.2004)

PCT

(10) International Publication Number
WO 2004/084417 A1

- (51) International Patent Classification⁷: **H03M 13/03**,
7/40
- (21) International Application Number:
PCT/IB2004/000834
- (22) International Filing Date: 16 March 2004 (16.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
03290714.9 20 March 2003 (20.03.2003) EP
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, 5621 BA Eindhoven (NL).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **LAMY, Catherine** [FR/FR]; c/o Société Civile SPID, 156 Boulevard Haussmann, F-75008 Paris (FR).
- (74) Agent: **LANDOUSY, Christian**; Société Civile SPID, 156 Boulevard Haussmann, F-75008 Paris (FR).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

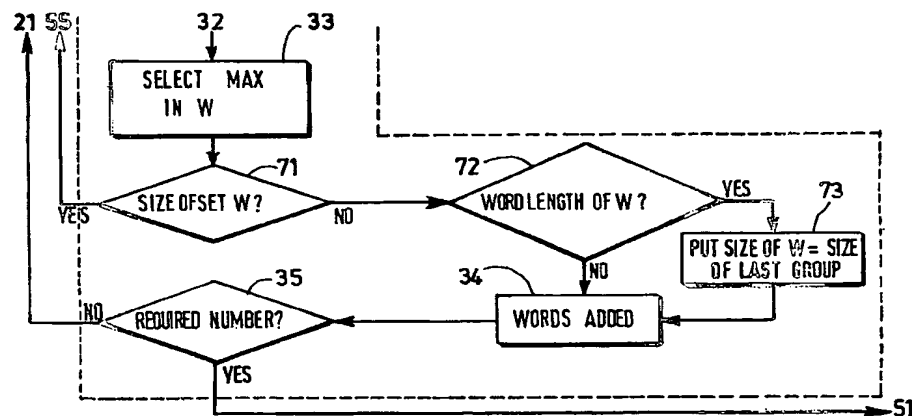
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,

[Continued on next page]

(54) Title: METHOD AND DEVICE FOR BUILDING A VARIABLE-LENGTH ERROR-CORRECTING CODE



(57) Abstract: The invention relates to a variable-length error-correcting (VLEC) code construction method, in which the main steps are : defining all the needed parameters, generating a code having a fixed length L1, storing in a set W thus obtained all the possible L1-tuples distant of the minimum diverging distance d 'min' from the codewords (one extra-bit being affixed at the end of all words if the new set W thus obtained is not empty), deleting all words of W that do not satisfy a distance criterion with all codewords, and verifying that all words of the final set W satisfy another distance criterion. Assuming that all distributions of number of codewords for the best VLEC codes have a similar curve allure of a bell shape type, it is then proposed, according to the invention, to define an optimal length value Lm until which the number of codewords increases with their length, whereas it decreases after said value Lm. According to this new construction method, called Lm optimization, it is possible to apply the so-called "Ls optimization" method with avoiding the edges of the curve and to work locally, wherein Ls represents a length to which the method skips back in the codeword deletion stage.



PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.